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Remarks

Reconsideration of remaining claims 19-21 is respectfully requested.

In the Office action dated June 24, 2005, the Examiner rejected remaining claims 19-21 under 35 USC §§ 102(b) and 103(a). The Examiner's various rejections will be discussed below in the order appearing in the Office action.

35 USC § 102(b) Rejection - Claims 19-21

The Examiner first rejected pending claims 19-21 as being anticipated by US Patent 4,756,810 (Lamont et al.), where Lamont et al. was cited by the Examiner as teaching a "sputtering apparatus" including "active cooling". In response to the Examiner's rejection, applicants have amended independent claim 19 to further define the ionized plasma generating tool as a "low temperature" device. Applicants' specification states that "the interconnect temperature is controlled by using an actively cooled pedestal in combination with a low temperature IMP deposition process....the use of low process temperatures only, or an actively cooled pedestal by itself, does not eliminate interconnect extrusions in vias".

Applicants assert that Lamont et al. does not anticipate the provisioning of a "system" that provides both pedestal active cooling and low temperature plasma processing in forming vias with minimal interconnect metal extrusions, as defined by amended claim 19. Applicants thus respectfully request the Examiner to reconsider this rejection and find claims 19-21 to be in condition for allowance.

35 USC § 103(a) Rejection - Claims 19-21

In the alternative, the Examiner also rejected claims 19-21 under 35 USC 103(a) as being rendered obvious by Lamont et al. In this particular rejection, the Examiner stated that "it would be obvious to use the sputtering apparatus of Lamont et al. to support a wafer having vias adjacent to an interconnect made from aluminum, aluminum alloys, copper or copper alloys". However, for the reasons given above, applicants submit that Lamont et al. cannot be found to render obvious a system that utilizes both an actively cooled pedestal and low temperature plasma process to prevent extrusions during

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the process of lining vias. Applicant thus respectfully requests the Examiner to reconsider this rejection and find claims 19-21 to be in condition for allowance.

35 USC § 102(b) Rejection - Claims 19-21

The Examiner next rejected claims 19-21 under 35 USC 102(b) as being anticipated by US Patent 5,266,524 (Wolters). The cited Wolters reference teaches the use of "active cooling" with liquid nitrogen. However, as with the Lamont et al. reference discussed above, Wolters does not disclose or suggest any "system" that provides both pedestal active cooling and low temperature plasma processing in forming vias with minimal interconnect metal extrusions, as defined by amended claim 19. Applicants thus respectfully request the Examiner to reconsider this rejection and find claims 19-21 to be in condition for allowance over the cited Wolters reference.

35 USC § 103(a) Rejection - Claims 19-21

In the alternative, the Examiner also rejected claims 19-21 under 35 USC 103(a) as being rendered obvious by Wolters, where in this particular rejection the Examiner stated that "it would be obvious to use the sputtering apparatus of Wolters to support a wafer having vias adjacent to an interconnect made from aluminum, aluminum alloys, copper or copper alloys". However, for the reasons given above, applicants submit that Wolters cannot be found to render obvious a system that utilizes both an actively cooled pedestal and low temperature plasma process to prevent extrusions during the process of lining vias. Applicants thus respectfully request the Examiner to reconsider this rejection and find claims 19-21 to be in condition for allowance.

35 USC § 102(e) Rejection - Claims 19-21

Claims 19-21 were further rejected by the Examiner under 35 USC 102(e) as being anticipated by US Patent 6,287,435 (Drewery et al.). The Examiner cited Drewery et al. as teaching a "sputtering apparatus" that includes the use of a "cooling loop" to maintain the wafer at a low temperature. However, as with the references discussed above, applicants assert that Drewery et al. cannot be found to anticipate the subject matter of the present invention, since Drewery et al. does not anticipate, disclose or suggest any "system" that utilizes a low temperature plasma ion tool in conjunction with an actively cooled pedestal during the sputtering process. As discussed above, a significant aspect of the present invention is that both elements are required to prevent

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extrusions of the interconnect metal into the via. Independent claim 19 has been amended to clarify this aspect of the present invention.

Based on these assertions, as well as the amendments to independent claim 19, applicant believes that the amended claims are not "anticipated" by Drewery et al., as required by 35 USC 102(e). Applicants thus respectfully request the Examiner to reconsider this rejection and find claims 19-21 to be in condition for allowance over the cited Drewery et al. reference.

35 USC § 103(a) Rejection - Claims 19-21

Lastly, the Examiner rejected claims 19-21 under 35 USC 103(a) as being unpatentable over Drewery et al. (as above). In light of the above arguments, applicants assert that claims 19-21, as amended, are neither disclosed nor suggested by Drewery et al. Applicants thus respectfully request the Examiner to reconsider this rejection and find claims 19-21 to be in condition for allowance.

In summary, applicants have amended the "Title" of this application to more accurately reflect the subject matter of this divisional application. Similarly, applicants have amended the specification to include reference to its character as a "divisional" application at the first line of the specification. Claims 19-21 have also been amended to more accurately define the subject matter of this application. In light of these various amendments, applicants believe that the case is now in condition for allowance and respectfully request an early and favorable response from the Examiner in that regard. If the Examiner does not agree that the case is ready to issue, the Examiner is invited to contact applicant's attorney at the telephone number listed below.

Respectfully submitted,

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